

Claims

What is claimed is:

- 5 1. A method of treating a neurological disorder, the method comprising steps of:

 providing a patient suffering from the neurological disorder or at risk for the
neurological disorder;

 providing microparticles comprising pharmaceutical agents useful in treating the
neurological disorder; and
10 administering the microparticles into the patient.
2. The method of claim 1, wherein the microparticles are selected from the group consisting
of liposomes, spray-dried particles, coacervates, and microspheres.
- 15 3. The method of claim 1, wherein the microparticles are less than 1 mm in their largest
dimension.
4. The method of claim 1, wherein the microparticles are less than 500 microns in their
largest dimension.
20
5. The method of claim 1, wherein the microparticles are less than 250 microns in their
largest dimension.

6. The method of claim 1, wherein the microparticles are less than 100 microns in their largest dimension.

7. The method of claim 1, wherein the pharmaceutical agent is selected from the group

5 consisting of site 1 sodium channel blockers, local anesthetics, glucocorticoid receptor agonists, and anti-epileptic drugs.

8. The method of claim 1, wherein the pharmaceutical agent is selected from the group consisting of site 1 sodium channel blockers, local anesthetics, and glucocorticoid receptor

10 agonists.

9. The method of claim 8, wherein the glucocorticoid receptor agonist is dexamethasone.

10. The method of claim 1, wherein the pharmaceutical agent comprises a site 1 sodium

15 channel blocker, a local anesthetic, and a glucocorticoid receptor agonist.

11. The method of claim 1, wherein the pharmaceutical agent is selected from the group

consisting of tetrodotoxin, saxitoxin, neosaxitoxin, decarbamoyl saxitoxin, gonyautoxin, natural and synthetic derviations of saxitoxin and tetrodotoxin, amino-amide and amino-ester local

20 anesthetics, bupivacaine, lidocaine, tetracaine, dibucaine, vanilloid receptor agonists, capsaicin, resiniferatoxin, hydrocortisone, dexamethasone, phenytoin, benzodiazepines, valproic acid, carbamazepine, felbamate, barbiturates, muscimol, and GABA receptor agonists.

12. The method of claim 1, wherein the step of administering comprises delivering the microparticles to a seizure focus within the brain of the patient.

13. The method of claim 1, wherein the step of administering comprises delivering the microparticles within or onto the brain, cerebrospinal fluid, or cerebral vasculature of the patient.

14. The method of claim 1, wherein the step of administering comprises delivering the microparticles within or onto an iatrogenically created or revealed site, plane, or cavity within the brain.

15. The method of claim 1, wherein the microparticles comprise a targeting agent.

16. The method of claim 15, wherein the targeting agent is selected from the group consisting of antibodies, fragments of antibodies, low-density lipoproteins (LDLs), transferrin, asialycoproteins, gp120 envelope protein of the human immunodeficiency virus (HIV), carbohydrates, receptor ligands, TAT sequence, and sialic acid.

17. The method of claim 1, wherein the microparticles are triggered to release the agent via radio-frequency beams, infrared, magnetism, osmotic changes, pH changes, electrical activity, or the presence of a particular triggering agent.

18. The method of claim 1 comprising additional step of compressing, complexing, or cross-

linking the microparticles to form a macroscopic pellet prior to delivery.

19. The method of claim 1, wherein the neurological disorder is epilepsy.

5 20. The method of claim 1, wherein the neurological disorder is selected from the group consisting of Parkinson's disease, Huntington's disease, Alzheimer's disease, tremor, hemiballismus, and choreas.

21. A method of treating cardiac arrhythmia, the method comprising steps of:

10 providing a patient suffering from a cardiac arrhythmia or at risk of a cardiac arrhythmia;

providing microparticles comprising at least one pharmaceutical agent useful in the treatment of arrhythmias; and

administering the microparticles to an arrhythmic focus of the heart of the patient.

15

22. The method of claim 21, wherein the pharmaceutical agent is selected from the group consisting of phenytoin, lidocaine, adrenergic agonists, dopamine, bromocriptine, pergolide, pramipexole, ropirinole, anticholinergic agents, benztropine, trihexyphenydydyl, biperyden, monoamine oxidase inhibitors, carbidopa, COMT inhibitors, GABA receptor agonists,

20 benzodiazepines, muscimol, clozapine, risperidone, zyprexa, tricyclic antidepressants, serotonin reuptake inhibitors, antipsychotic drugs, adrenergic antagonists, amiodarone, and procainamide.

23. The method of claim 21, wherein the pharmaceutical agent is selected from the group of Class I, II, III, IV, and V antiarrhythmic drugs.

24. The method of claim 21, wherein the pharmaceutical agent is selected from the group consisting of quinidine, procainamide, disopyramide, lidocaine, mexiletine, tocainide, phenytoin, flecainide, encainide, propafenone, propranolol, nadolol, pindolol, labetalol, timolol, metoprolol, acebutolol, atenolol, esmolol, alprenolol, bretylium, amiodarone, sotalol, verapamil, and diltiazem.

25. The method of claim 21, wherein the pharmaceutical agent is selected from the group consisting of site 1 sodium channel blockers, local anesthetics, and glucocorticoid receptor agonists.

26. The method of claim 21, wherein the pharmaceutical agent comprises a site 1 sodium channel blocker, a local anesthetics, and a glucocorticoid receptor agonist.

27. The method of claim 26, wherein the glucocorticoid receptor agonist is dexamethasone.

28. The method of treating preterm labor, the method comprising steps of:

providing a patient suffering from preterm labor or at risk for preterm labor;

providing microparticles comprising at least one tocolytic agent useful in stopping

or preventing tocolysis; and

administering the microparticles nearby or to the uterus of the patient.

29. The method of claim 28, wherein the tocolytic agent is selected from the group consisting of adrenergic agonists and calcium channel blockers.

5 30. The method of claim 28, wherein the pharmaceutical agent is selected from the group consisting of site 1 sodium channel blockers, local anesthetics, and glucocorticoid receptor agonists.

31. The method of claim 28, wherein the pharmaceutical agent comprises a site 1 sodium
10 channel blockers, local anesthetics, and a glucocorticoid receptor agonist.

32. The method of claim 28, wherein the pharmaceutical agent comprises a site 1 sodium channel blocker.

15 33. The method of claim 28, wherein the pharmaceutical agent comprises a site 1 sodium channel blocker and another agent selected from the group consisting of calcium channel blockers, adrenergic agonists, local anesthetics, and glucocorticoid receptor agonists.

34. The method of claim 28, wherein the pharmaceutical agent comprises a site 1 sodium
20 channel blocker and another agent selected from the group consisting of local anesthetics and glucocorticoid receptor agonists.

35. A pharmaceutical composition for suppressing electrical activity in an electrically excitable tissue comprising a site 1 sodium channel blocker, a local anesthetic, and a glucocorticoid receptor agonist.

5 36. The composition of claim 35, wherein the tissue is brain.

37. The composition of claim 35, wherein the tissue is heart.

38. The composition of claim 35, wherein the tissue is uterus.

10

39. The composition of claim 35, wherein the site 1 sodium channel blocker is selected from the group consisting of tetrodotoxin, saxitoxin, neosaxitoxin, decarbamoyl saxitoxin, gonyautoxin, and derivative thereof.

15 40. The composition of claim 35, wherein the local anesthetic is selected from the group consisting of benzocaine, bupivacaine, cocaine, etidocaine, lidocaine, mepivacaine, pramoxine, prilocaine, procaine, procainamide, proparacaine, ropivacaine, tetracaine, and dibucaine.

41. The composition of claim 35, wherein the glucocorticoid receptor agonist is selected from
20 the group consisting of hydrocortisone, dexamethasone, cortisone, prednisone, beclomethasone, betamethasone, flunisolide, methyl prednisone, paramethasone, prednisolone, triamcinolone, alclometasone, ancimonide, clobetasol, fluorocortisone, diflurosone diacetate, flucinolone acetone, fluoromethalone, flurandrenolide, halcinonide, medrysone, and mometasone.

42. The composition of claim 35, wherein the glucocorticoid receptor agonist is dexamethasone.

5 43. A pharmaceutical composition for suppressing electrical activity in an electrically excitable tissue comprising a site 1 sodium channel blocker, and another agent selected from the group consisting of local anesthetics and glucocorticoid receptor agonists.